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MCZ newsletter

MUSEUM OF COMPARATIVE ZOOLOGY

RARE ANIMALS IN RESIDENCE IN CONCORD AND CAMBRIDGE



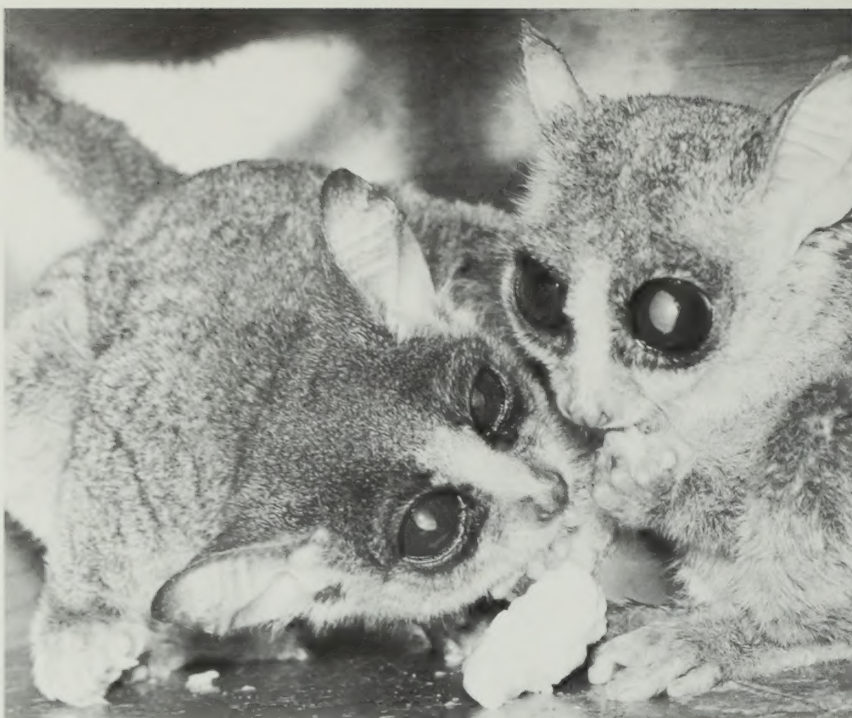
You're not seeing double! This baby slow loris (a nocturnal primate found in India, Ceylon and south-east Asia who rarely breeds in captivity) is not going to let go of mother no matter what! Undergraduate student Polly Parsons has constructed a rope treadmill to measure the energy costs of languorously brachiating – loris-style.

Over the past year the Concord Field Station has become a veritable menagerie. The animals, which range from the exotic echidna (an egg-laying mammal with a pouch) to the more humble domestic dog, are taking part in a variety of studies including measurement of the amount of energy used in moving and the rate of oxygen consumption during exercise. For some of these experiments, masks are tailor-made for the animals. "We can make a mask for any head now," says Victoria Rowntree, research assistant to Profes-

sor C. R. Taylor, an experienced mask-maker for ostriches, lions, hedgehogs, and monkeys.

The animals are comfortably housed in a new facility (made possible by the support of the Faculty of Arts and Sciences) which allows them to stretch their legs both indoors and out.

City-living in Cambridge is also enjoyed by some of the animals who live in two specially-designed rooms on the second floor of the MCZ Labs.



a.



b.



c.



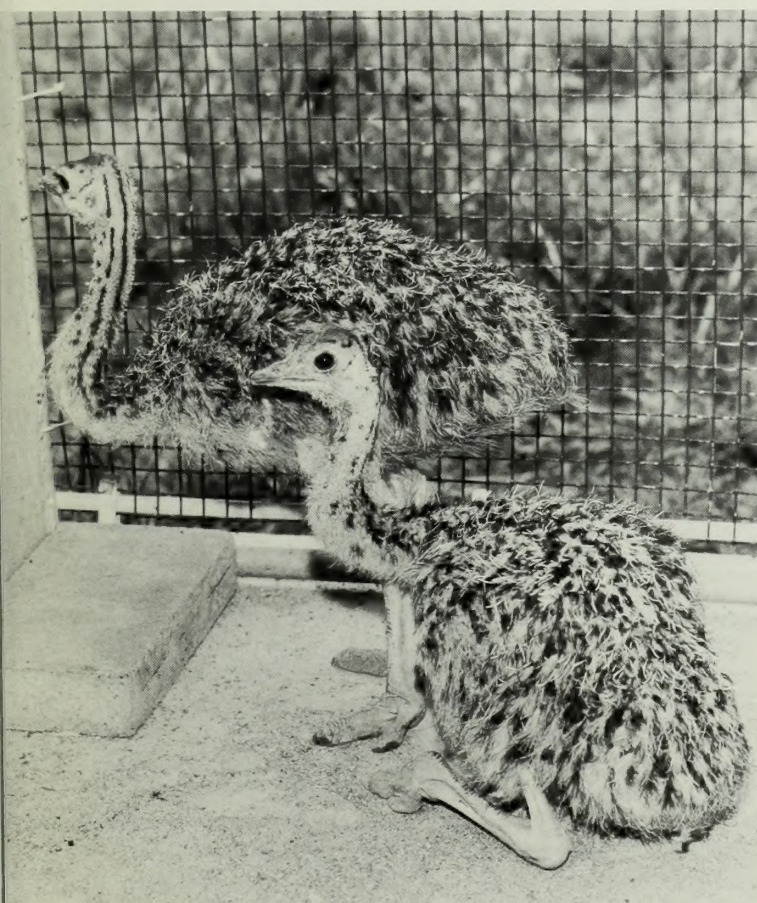
d.



e.



f.



h.



g.

a. These galagos (also known as bush babies) are relatives of the lorises and come from Africa. Unlike the tail-less loris, they have long bushy tails. Their hind legs are much longer than the fore limbs, making them high jumpers. Dr. Taylor is measuring how much energy it takes them to leap.

b. The fossil record, it has been claimed, shows that this diminutive creature, the hyrax, is related to elephants and sea cows. His temperament belies his gentle mien and thick gloves are a necessity for the protection of the handler. During a rather turbulent photography session, this animal escaped from his box and is contemplating his next move.

c. Ludwig, the female rhea from South America, in full bloom.

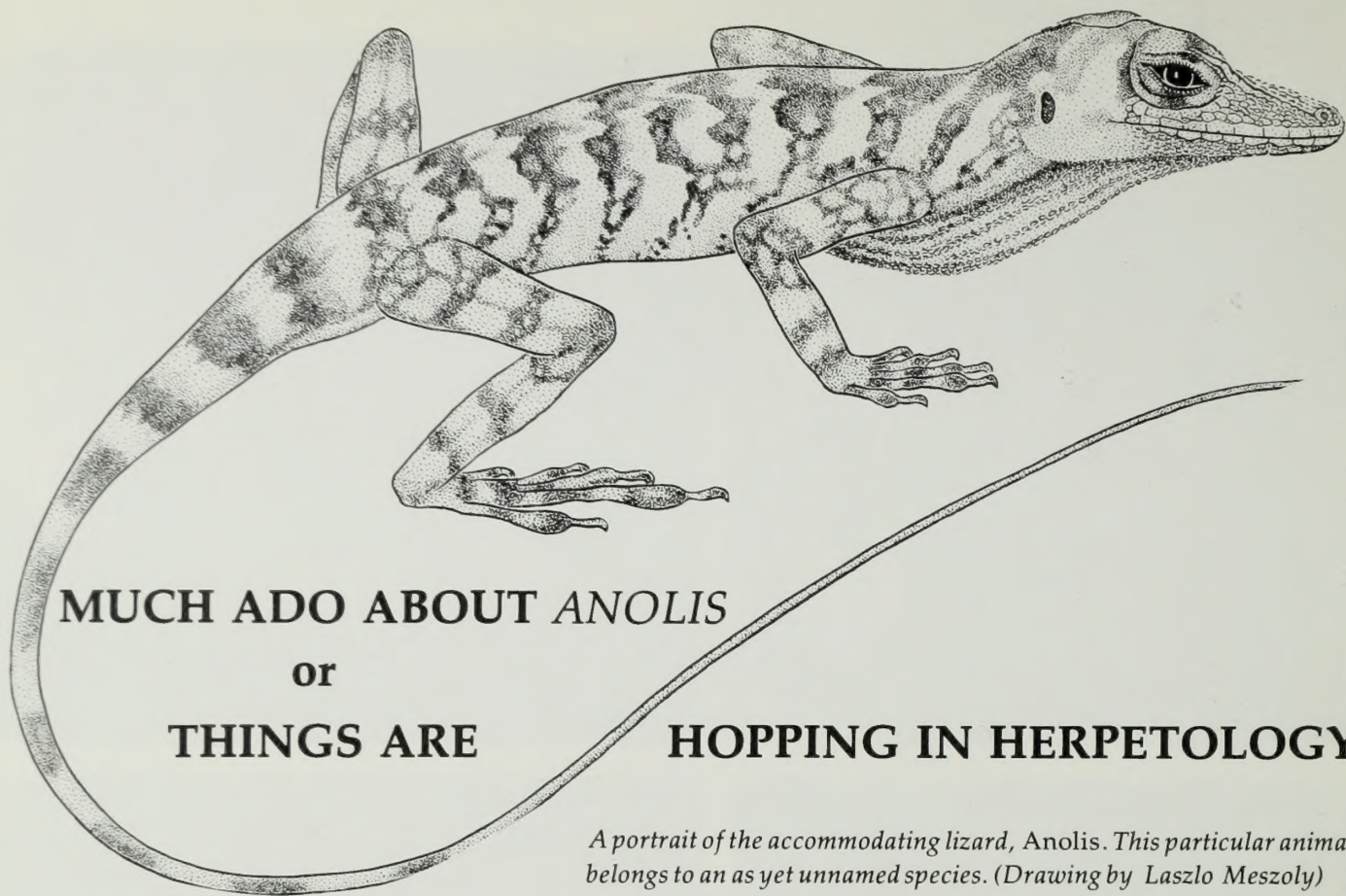
d. The echidna (or spiny ant-eater) is also called *Tachyglossus* which means "sticky tongue". This primitive animal from Australia has ingeniously adapted its long tongue to function like fly-paper to trap the staple of its diet — termites.

e. These setifers, a rare insectivore from Madagascar, are rarely seen in the United States. It is even rarer for them to be born and bred in Concord. These babies have just opened their eyes.

f. The European hedgehog in Vicky Rowntree's gloves is obviously feeling comfortable. If he weren't, he'd roll up into a ball of prickles.

g. Pam Chassin has her hands full with her fast-growing charges. These lion cubs (here on loan) are getting rid of some of their excess energy in constructive ways — by running on the treadmill to provide data for Pam's senior thesis.

h. These three month old baby ostriches are bound for Italy to participate in studies using Professor Giovanni Cavagna's "force plate". This instrument helps researchers analyze the force generated in all three dimensions while an animal walks.



MUCH ADO ABOUT ANOLIS

or

THINGS ARE

HOPPING IN HERPETOLOGY

A portrait of the accommodating lizard, Anolis. This particular animal belongs to an as yet unnamed species. (Drawing by Laszlo Meszoly)

Happy is the researcher who works on *Anolis*! This genus of lizards, which abounds in the Caribbean and South America, has become the ecological counterpart of *Drosophila*, the fruit fly which has long been the star performer for geneticists.

There are several factors which contribute to the undeniable charm of *Anolis*. They are frequently very abundant which facilitates collection of masses of data — this in turn permits detailed analyses of behavior and ecology not possible with other, less common lizards. Moreover, they are extremely diversified. Over 200 species have been named to date, and new species are being discovered even now (two probable new species were found this past summer). The evolutionary and ecological diversification of this genus is impressive. These lizards exhibit a variety of adaptations: some live in cave entrances, others in tree crowns, others on the trunks, others in bushes and grass; they vary in size (leaving out the tail) from an inch and a half to over 8 inches; most eat insects but a few eat plants. They don't fly, but there is little else that they don't do. (Some of them live on river banks and take refuge under water when pursued.)

The fact that they are diurnal and visually oriented is another obviously favorable attribute — all of their interactions are visual, and these can easily be witnessed. The hospitable climates that they inhabit also add to the allure of studying *Anolis*. (But as the photograph on the right shows, the vegetation is not always as hospitable as the climate — nor are the mosquitoes.)

Professor Ernest E. Williams, Curator of Herpetology (Reptiles and Amphibians), sits at the center of a

network of researchers who, with the help of a generous grant from the National Science Foundation, are radiating throughout the Caribbean and down into South America trying to find out all there is to know about *Anolis*.

The West Indies has always been the center of *Anolis* operations. The animals are better known there, and many of them are fantastically common. Recently Hispaniola (Haiti plus the Dominican Republic) has been the point of greatest concentration. It has several chains of high mountains, deserts and rain forest — in fact, an extraordinarily diverse set of habitats all occupied by *Anolis*, some generalized, some specialized.

The widespread species in Hispaniola are all known, but new local species are continually turning up. Professor Williams and T. Preston Webster are collaborating in describing two such local species, one of which is the third member of a miniradiation that is an example of speciation by chromosome difference. The other is a species recognizable in the field by the color of the dewlap but otherwise extremely similar externally to a common and widespread species. This species is of interest because it is very distinct biochemically.

Preston Webster is just finishing his thesis on one group of Hispaniolan *Anolis*, combining field evidence with biochemistry to establish species status, occurrence of hybridization, etc.

Professor Williams, in addition to other tasks, such as sorting out the species groups of West Indian and South American anoles, is interested in species borders. One case of a moving species border is that of a



Curatorial Associate Patricia Haneline readies some anoles to be sent out on loan.

Cuban *Anolis* that long ago invaded western Jamaica. It is slowly moving eastward, as a survey last summer demonstrated. Robert Holt is interested in this case as well as the more general problem.

The Bahamas are another center of *Anolis* interest, especially for Drs. Thomas and Amy Schoener. They have been watching and marking the lizards of the area for years. Last spring they spent two months on a small boat studying the distribution of anoles and other lizards on the little islands and islets that surround the big islands of the Bahamas in an attempt to test some current theories of island biogeography. It turned out to be an often lonely and sometimes dangerous business, but the data obtained made the venture worthwhile.

In Panama Stanley Rand, formerly a graduate student at the MCZ and now with the Smithsonian Tropical Research Institute, is using direct observations and films in a comparative analysis of anole display behavior. He has at Balboa an outside orchid house in which many species of anoles are living and breeding, providing data that would not otherwise be available.

Dr. Robert Trivers has studied the mating behavior of two Jamaican lizards which inhabit the same area but differ greatly: one is a fast, aggressive and territorial green giant; the other is gray, smaller, slow, and non-aggressive.

Graduate student Kenneth Miyata and Junior Fellow Ross Kiester journeyed to an arid section of Venezuela and on a barren, windswept peninsula where there are only thorn bushes and low herbs and grass found 70 individuals of one species living in a three-acre vegetational island. This proved a perfect natural laboratory to study the ecology of a species that lives alone, quite isolated from its relatives.

Graduate student Paul Hertz is particularly interested in the systematics and ecology of a group of small, secretive Hispaniolan anoles which live in grass clumps (not surprisingly, they are nicknamed "grass anoles"). Last summer he confirmed his prediction that two closely related species coexist in many localities — previously they had been thought to occupy different habitats, one in wet areas and the other in dry ones. He and Ray Huey found what they believe to be a new species of grass anole on the Barahona peninsula in the Dominican Republic; Hertz is currently doing biochemical studies to determine the status of these animals.

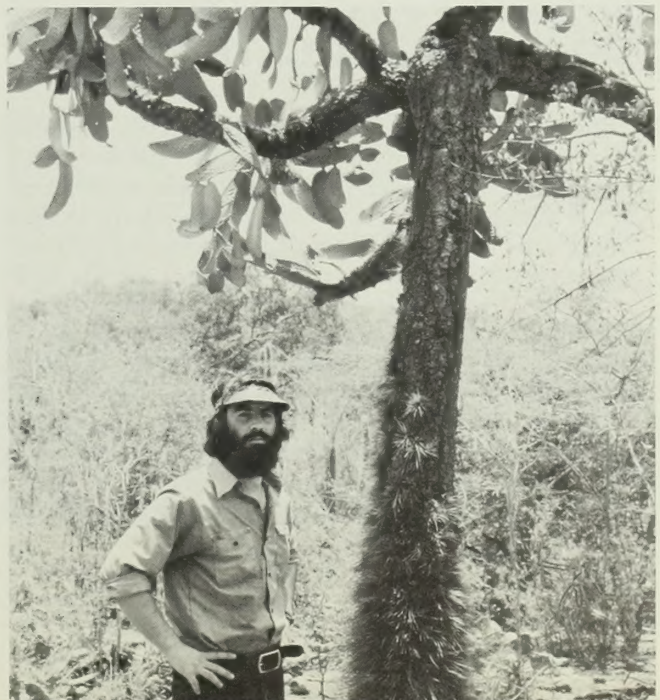
Graduate student Ray Huey is examining temperature regulation and has studied a particular group along an altitudinal gradient from the lowlands to the mountain tops in Hispaniola. Since their body temperature is not maintained by metabolism (as in mammals), these lizards must behaviorally adapt to their environment to survive. In the hot lowlands, they live primarily in shaded habitats but montane populations live in open spaces and bask in the sun to absorb sufficient heat.

A colony of lizards is now living in one of the bunkers at the Concord Field Station. In the simulated tropical climate of this underground home, their locomotion is being studied by Dr. Jane Peterson. She is particularly interested in learning what makes the adhesive pads (the hallmark of the genus) on their feet work.

In order to exchange information between all these and a number of other researchers, a *Second Anolis Newsletter* was issued last April. (There never was a "First Newsletter" as such but there was an annual report to the National Science Foundation that was used as an in-house information bulletin.) In his "Editorial Notes and Comments", Professor Williams comments, "The Editor does not suppress some exultation at the breadth of the coverage of one vertebrate group that is here achieved. But he is happier still that broad advance has been and continues to be one in which the separate assaults on particular problems turn out in fact to be mutually reinforcing."

A natural result of all this activity is a steady stream of new specimens to be added to the collections. Fortunately, the entire herpetological collections are now rebottled and realcooled. The whole area is in the process of being renovated, and additional space has been allocated to allow expansion space for specimens and work space for staff, students and visitors. Patricia Haneline has been appointed Curatorial Associate in Herpetology and brings her experience at the California Academy of Sciences to bear in her new role.

Graduate student Ray Huey is dwarfed by a cactus — a tree *Opuntia* — in the Dominican Republic last summer.



(Photo by Paul Hertz)

NEW ROMER LIBRARY IS OFFICIALLY OPENED

Alfred S. Romer's wry wit and wisdom was recalled through pithy quotes from his correspondence by his wife, Ruth, at the ceremony on June 5 to officially open the new Romer Library. Professor Romer's extraordinary collection of books and reprints on vertebrate evolution will now continue to be an invaluable resource for students in the field.

Professor Farish A. Jenkins, Jr., Curator of Vertebrate Paleontology, remarked that it was fitting that Professor Romer's old office, now graciously refurbished, would continue to serve as a meeting place for students, staff, and visitors to the MCZ.



The photo of Professor Romer in the field hangs behind (left to right) Professor Farish A. Jenkins, Jr., Miss Nelda Wright (Professor Romer's research assistant for many years), Mrs. Ruth Romer, and Professor A. W. Crompton, Director of the MCZ, at the opening of the Alfred Sherwood Romer Library.

EL MUSEO PATTERSON, ESTANZUELA, GUATEMALA

Professor Bryan Patterson was happily surprised this summer when he found that the new fossil museum in Estanzuela, Guatemala was to be named in his honor. Serving as a consultant with the International Executive Service Corps, Professor Patterson spent two months during the summer of 1971 in Estanzuela in response to a request from the Guatemalan Tourist Bureau (INGUAT). Reports had been made to the Bureau of bones found in the area, and INGUAT wanted to know if it would be worthwhile to erect a museum at the site. Professor Patterson and his group found a nearly complete *Mastodon* skeleton, the skull of a large extinct *Capybara* (one of the largest rodents that ever lived), and other finds that now

constitute part of the Museum's permanent collection. In fact, Estanzuela is built on an ancient flood plain now rich with the fossilized remains of animals which inhabited the area in the late Pleistocene, some 30,000 years ago. Ingeniero Roberto Woolfolk continued to collect and prepare fossil finds in order to complete the exhibits. President Kjell of Guatemala dedicated the new Museum in June, 1974.

LARGEST TURTLE MAKES BIGGEST NEWS

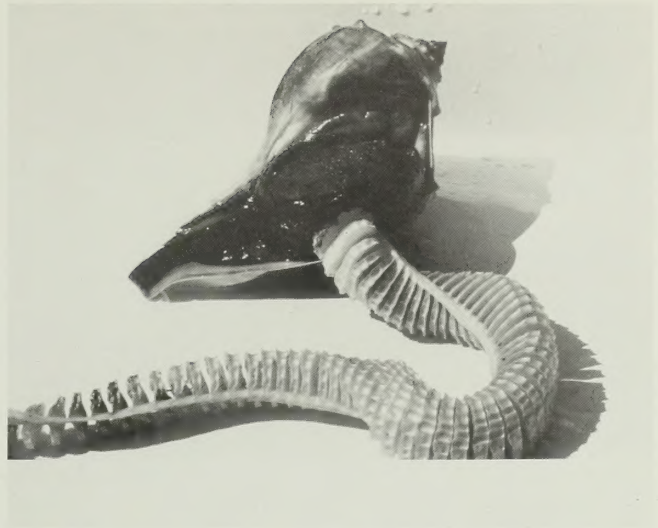
Ripley really hit on something with his *Believe It or Not*. The MCZ's biggest publicity ever has come from finding and displaying the largest turtle carapace (from Venezuela, 6 million years old) ever found. From the Paris edition of the *Herald Tribune* to the second-grade edition of *My Weekly Reader* to countless local papers, everyone (it seems) now knows that they can see the world's largest turtle if they visit the MCZ.



Chief Preparator Arnold Lewis and six movers from Casey and Hayes Moving Company maneuver the huge shell into its exhibition spot in the Museum's Fossil Reptile Hall.

MARINE-STYLE BABY BOOM

If you've spent any time on a Cape Cod beach, you've doubtless seen these long white egg cases. If you've broken into one of the unopened discs, you've probably discovered at least fifty little shells inside that didn't eat their way out on schedule. But you probably haven't seen where they came from before. This picture by George Buckley shows a whelk shell giving birth. George, who has been around the Mollusk Department for the last twelve years and teaches at Watertown High School, is the co-founder with William Sargent of the Cape Cod Marine Science Center in Pleasant Bay, Orleans where they are conducting faunal and floral studies of one of the largest local unpolluted bodies of water.

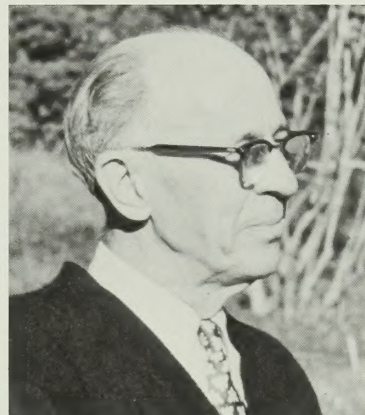


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DR. A. M. CHICKERING 1887-1974



Dr. A. M. Chickering, Research Associate in Arachnology (spiders) from 1953 until 1971, died on May 24, 1974 after a long illness. He earned a B.Ph. from Yale University in 1913, a Master of Science degree from the University of Wisconsin in 1916, and a Ph.D. in 1927 from the University of Michigan. Dr. Chickering began his long association with the Museum in the summer of 1928 when he met Thomas Barbour, later Director of the Museum, on a field trip to Panama. Dr. Chickering's contributions, most of which have been published by the MCZ, include classifications of most of the spider fauna of Panama and much of the West Indies.

Dr. Chickering was a tireless collector, and the MCZ collections have reaped the benefit of much of his effort; he generously gave all of his specimens and library to the Museum. He was especially helpful with sorting the collections, identifying difficult specimens, and giving advice to students. Since he left the Museum in 1971, Dr. Chickering has been sorely missed.

PREHISTORIC PEST

If you had been camping in Arkansas in the Eocene (sixty million years ago) you might have been bitten by this tiny (less than .7 mm long) midge. Perfectly preserved in amber, this insect is part of an important new collection of fossil insects, spiders, and plants found and donated to the MCZ by geologist Royal H. Mapes and his wife Gene who first discovered the fossil-bearing amber in 1971.

Professor Frank M. Carpenter, Honorary Curator of Fossil Insects, welcomes this first opportunity to learn about the insect population of the southern states in the Eocene. So far it appears that there are fewer different types as compared with previous finds from the northern states of the Eocene.



*Photo by F. M. Carpenter
(magnified 40 times)*



FROM THE FIELD STATION

By William K. Newbury

The Estabrook Woods was aswarm with researchers during the summer studying everything from beetles

to lichens to trees. The participants included faculty, college and high school students, and a strong group of amateurs, including one mother with her four-month-old baby strapped to her back. It was exciting to see how much was accomplished and how well the new lab facilities worked. The drought caused our only major problem. Dr. Andrew Spielman, who is studying the spread of equine encephalitis, couldn't find enough mosquitos for his research! Our work continues right into the fall with seventeen amateurs live-trapping chipmunks as the first step in Dr. Charles P. Lyman's chipmunk hibernation study.



THE MCZ PUBLISHES AN IMPORTANT NEW BOTANICAL GUIDE TO THE CONCORD AREA

An unusual event in the history of the MCZ's publication program is being greeted with interested enthusiasm, not only by local botanists but also by admirers of Thoreau, who figures prominently in Richard J. Eaton's *A Flora of Concord*. But the fact that a zoological museum is publishing a botanical book is really not so far-fetched as this comprehensive and readable handbook will be a valuable reference for workers at the MCZ's Concord Field Station as well as the many botanists that abound in this region.

Richard Eaton, past President of the New England Botanical Club, has accumulated his store of knowledge in more than sixty years of intermittent collecting in eastern Massachusetts. The publication of his definitive work is a long-awaited and eminently welcome event.

Richard J. Eaton
(Photo by Barbara B. Paine)

"FRIEND"-LY NEWS

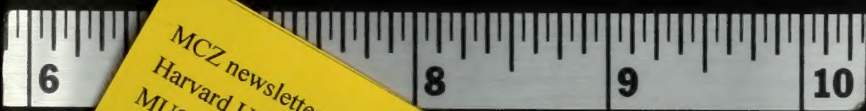
Dr. James Mead's talk to the Friends of the MCZ on October 10 got the Fall Program off to an energetic start. His slides and descriptions of the marine mammals of Baja California not only whetted the appetites of those Friends who will be traveling to see them in person next January 28 but provided the rest of the audience with detailed insights into the unusual life-style of the gray whale and its neighbors. Two more events, a lecture on November 7 and an evening of films on December 5, will round out this program.

A series of special Saturday trips closer to home are planned for the Spring. Among the possibilities currently contemplated are trips to Brewster, Cape Cod to see the April alewife herring upstream migration, to Connecticut to make castings of dinosaur footprints, and to Concord for a walking tour of the Estabrook Woods and a look at the animals at the Field Station.

"Friend"-ly feelings are flourishing as more members of the Harvard community and beyond are finding out just *who* we are from a new brochure which has been widely distributed. Herb Pratt, President, extends a warm welcome to all the new Friends.



At the first Friends event of the Fall, (left to right), Herbert Pratt, President, Dr. James G. Mead, Gabrielle Dundon, and Dr. Theodore W. Pietsch (Ichthyology) chat before Dr. Mead's lecture. Dr. Pietsch and Ms. Dundon will be accompanying the Friends on the upcoming Baja expedition.



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Ernst Mayr

